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MAPS SHOWING GEOLOGY, OIL AND GAS FIELDS, AND GEOLOGIC PROVINCES OF THE ARCTIC

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Scale 1:6,500,000

ABOUT THIS MAP

This digital compilation is an interim product of the U.S. Geological Survey's World Energy Project (WEP) and part of a series published on CD-ROMs.
The goal of the WEP is to assess the undiscovered, technically recoverable oil and gas resources of the world. Results of this assessment were reported in 2000 (see USGS DDS-60).

This map has been compiled from the Circumpolar Geological Map of the Arctic, by Okulitch A.V., Lopatin B.G., and Jackson H.R., published by the Geological Survey of Canada in 1989, scale 1:6,500,000.

Data processing steps:

1. The original map was scanned on a large format Ideal scanner in gray-scale mode with a resolution of 200 dpi and transformed to ArcInfo Grid.
2. The grid from step 1 was transformed to Polar Stereographic projection using a second order polynomial transformation (ArcInfo GRIDWARP utility).
3. Reference points for transformation were a combination of latitude-longitude intersections taken from the paper map and the same points projected to Polar Stereographic in ArcInfo using the PROJECT utility.
4. A number of piecewise rubber sheeting transformations were applied to the grid from step 3 using ArcInfo CONTROLPOINTS and ADJUST utilities.
5. Reference points for transformations were taken from ESRI's shoreline data layer projected to Polar Stereographic projection.
6. On-screen digitization was performed using the rectified grid from step 5 as a backdrop in ArcInfo ARCEDIT.
7. In the geology coverage, geologic attributes were assigned to the AGE and AGE_GEN items of the Polygon Attribute Table (PAT). Onshore and offshore polygons were attributed separately.
8. Geologic age attributes of the Canadian portion of this map were compared with those from the Geological Map of Canada CD-ROM (Map D1860A, 1997). As the first step more than 600 unique values from Map D1860A were transformed to the corresponding ages of this map legend and used as a reference in assigning final age values.
9. The International Bathymetric Chart of the Arctic Ocean (IBCAO) was donwnloaded from NOAA web site in ArcView shape file format, converted to ArcInfo coverage, and clipped with the geology coverage.
10. The USGS Geologic Provinces from the USGS DDS-60 publication were projected to Polar Stereographic projection and clipped with the geology coverage.

Shore line, rivers and country boundary coverages used on the map are the property of Environmental Systems Research Institute, Inc. (ESRI) and are used with their permission.

Data are provided in both unprojected (geographic coordinates) and projected coordinates.
Projection - Stereographic,
Latitude of central meridian - 0
Latitude of projection center -90
View - North Pole
Latitude of standard parallel - 75

Bathymetric contours were taken from the International Bathymetric Chart of the Arctic Ocean (IBCAO), created by the International Oceanographic Commission (IOC), US National Oceanic and Atmospheric Administration (NOAA). This project is the result of efforts of eleven institutions in eight countries, including Canada, Denmark, Germany, Iceland, Norway, Russia, Sweden, and the USA.
Data set WEB address is: http://www.ngdc.noaa.gov/mgg/bathymetry/arctic/arctic.html

DESCRIPTION OF MAP UNITS

1. The bathymetric contours range is -5200 meter to 3200 meters.
For ArcView projects display purpose, only sea bottom depths (minus values) were shown.
2. All area (polygons) and line (faults, contacts) features of digital geologic maps were assigned by additional item: POS. This item indicates the position of lines and polygons: onshore or offshore. This ensures that onshore and offshore geology can be displayed separately .
This particular map shows only onshore geology supplemented in offshore areas by bathymetric contours.